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The NATIONAL ELEMENTARY PRINCIPAL

BULLETIN OF THE DEPARTMENT OF ELEMENTARY SCHOOL PRINCIPALS
NATIONAL EDUCATION ASSOCIATION

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Featuring—

AIR-AGE EDUCATION in the Elementary School

Volume XXVIII, No. 3
December 1948

Guest Editor . . .

THE Aviation Education Division of the Aviation Training Staff of the Civil Aeronautics Administration has been the leader in the field of aviation education for six years. The articles in this issue of *The National Elementary Principal* give an account of current problems and practice in the field of aviation education and also a listing of some of the texts, films, and sources of material for the elementary school teachers. Appreciation is expressed not only to Howard W. Sinclair, director, Aviation Training Staff and H. E. Mehrens, chief, Aviation Education Division, but also to Frederick B. Tuttle, educationist, CAA, who has compiled the material on Aviation for this particular bulletin and has served as guest eeditor.

THE NATIONAL ELEMENTARY PRINCIPAL

BULLETIN OF THE DEPARTMENT OF ELEMENTARY SCHOOL PRINCIPALS

Published in September, October, December, February, April and June by the Department of Elementary School Principals of the National Education Association of the United States.

All elementary principals—administrative, supervisory, and teaching—are eligible to active membership in this department. The payment of $5 dues entitles active members to attend all meetings of the department, to hold office, to vote, and to receive the Bulletins.

Associate membership may be had by all members of the National Education Association who are actively engaged in any phase of school work by paying the regular membership fee of $5. They are entitled to all privileges except the right to vote and hold office.

Subscription to non-members is $5 per year; single copies of the Yearbook, $3; October, December, February, April, and June issues of the Bulletin, 50 cents.

Entered as second-class matter November 20, 1922, at the postoffice at Washington, D. C., under Act of August 24, 1912. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized December 18, 1922.

Executive and Editorial Offices, 1201 Sixteenth Street, Northwest, Washington 6, D. C.

Eva G. Pinkston, Editor

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(The Contents of this Bulletin are listed in the Education Index)

The National Elementary Principal

Volume XXVIII, No. 3 December, 1948

(Twenty-eighth Year of Publication)

We Present

Page

Air-Age Education in the Elementary School:
Editorial—*Eva G. Pinkston* 2

Aviation and Elementary Education—A Challenge to Teacher Education—*Finis E. Engleman* 3

The Principal's Role in Air-Age Education—*Everett T. Calvert* 5

Current Efforts to Solve Aviation Education Problems—*Howard W. Sinclair* and *H. E. Mehrens* 7

Progress in Room 202—*Glenn O. Blough* 10

The Practical Arts in the Air Education Program—*Emerson E. Neuthardt* 12

Science Answers the Questions—*Marjorie H. Campbell* 16

Aviation: Enriching the Language Arts and Social Studies Program—*Dorothy Espenlaub* 18

Mathematics in Children's Studies of Aviation—*Lorraine Sherer* 22

We Try Our Wings—*Elsie Whitlock Adams* 25

Texts, Films and Filmstrips, and Sources of Free and Low Cost Materials in Aviation for the Elementary Grades 30

Tenth Annual Conference on Elementary Education 36

Creating a Positive Health Attitude—*Elizabeth R. Maguire* and *Raymon W. Eldridge* 37

Parent-Teacher Understanding Through Visitation—*Richard G. Kroenke* 43

Democracy in School Reporting—*R. B. Layton* 47

The articles herein printed are the expressions of the writers and not necessarily those of the Department.

Air-Age Education in the Elementary School

AS a teacher, a principal and your executive secretary, we have long been aware of the interest and understanding of aviation exhibited by children, and have recognized the numerous possibilities for fusing this understanding into the elementary program at all grade levels. The process whereby teachers may gain the knowledge of aviation necessary for such fusion with classroom activities need not be too difficult. Through the child's natural interest in aviation, learning can be motivated and activities involving social, health, and scientific understandings can be enriched.

Today, the fact of the airplane's impact on the thinking of man in his relations to his fellowmen, on matters of war and peace, and on matters of government, commerce, and industry has made it categorically imperative for the school to introduce air age understandings to its pupils. For the past two or three years many resources have been available for the alert teacher to learn about the science and social implications of aviation and about its pedagogy. The U. S. Civil Aeronautics Administration's nation-wide summer workshop program is providing thousands of school people with the know-how of aviation. Its assistance to state and city school systems is encouraging programs of aviation education throughout the nation. Its research is attempting to solve problems of curriculum and teaching methods. Link Aviation, Inc., American Airlines, United Air Lines, Trans World Airline, and the Pan American World Airways also provide first rate consultant services and produce valuable educational materials which the elementary teacher can use to good advantage.

This number of *The National Elementary Principal* calls attention to aviation education not only in terms of its general educational significance, but more particularly in terms of its practical classroom aspects through accounts by teachers and supervisors of what teachers are doing in aviation education. Included is a discussion of a current study by the American Council on Education and the CAA to determine best methods in aviation education. There is also a selected listing of texts, films, and sources of free and low cost materials, compiled by the aviation experts of the government, the airlines, and industry.

Although much has been accomplished in the past six years to bring aviation into the classroom, the last word as to method and curriculum has not been said. Throughout these accounts of practice and research is found a spirit of questioning, experimentation, and adaptation. Perhaps the greatest value the air age has for the teacher is in the challenge it provides for professional growth in leading her to solve its many problems.

—Eva G. Pinkston

Aviation and Elementary Education—A Challenge to Teacher Education

FINIS E. ENGLEMAN

Commissioner of Education, State of Connecticut

[Dr. Engleman, a Navy pilot in both World Wars and formerly President of the Connecticut State Teachers College at New Haven, has long been interested in aviation education. Perhaps the first air age course ever to be offered to teachers in the United States was his at the Kansas City, Missouri, Teachers College in the mid-1920's.]

SINCE the day when a brilliant Chinese military tactician captured a walled city by sending airborne troops over the barricades, air as a supporting medium for transportation has challenged the ingenuity of man. Little by little, with theory, trial and error, experimentation, and with the application of proved scientific principles, the demonstration at Kitty Hawk in 1903, which revolutionized the world, came to pass. The results of this first flight by a heavier-than-air, power-driven, man-controlled airplane literally shrunk the world, made its people interdependent and congested, completely changed theories of international relations and politics, and made obsolete the previously used strategy and tactics of war. The implications for education of this amazing invention were not recognized by educators until after World War I.

During the 1920's, when all American education was undergoing a thorough reëvaluation relative to objectives, methods and content, a few educators began to emphasize the place of air transportation in the curriculum. With the coming of World War II, the curriculum again was reëxamined, particularly in relation to education for war, and again the need for including aviation was clearly demonstrated. Thus, in peace and in war, objective analysis proved the signal place of this important area of skills, knowledges, and understanding. Like other new fields, however, aviation has met with resistance, particularly in the elementary schools. Until the education of teachers and the vision of administrators have been modernized, this condition will prevail. As early as 1926 the writer observed activities, projects and study areas in the elementary schools which thrilled children and gave them knowledge, understanding, and competency in this then new area of the curriculum.

The aviation program should begin in the kindergarten, where it may be the stimulation and inspiration of dramatic play, poetic expression, creative art, and manual construction. Useful knowledge, too, as well as social competency may be a direct result. Every grade in the elementary school may well be used to broaden the understanding, add to the knowledge, and meet the interest needs in this rich and complex field.

It is difficult to conceive of any area or center of interest which has more potentialities for gaining the attention of children and for achieving the basic objectives of the elementary school than has the subject of aviation. Furthermore, the range of experience possible in such a study gives every opportunity of meeting the individual aptitudes and competencies of all grades and classes. One child may delve deep into the social and economic aspects of the air age; another may experiment widely and do basic research in several related sciences; still another may look into the mechanical and operational side of the subject; and yet another may investigate the vocational implications. Unlike many problem areas of the curriculum, the study of aviation offers countless opportunities to gain knowledge and understanding firsthand. Knowledge in this field is not limited to vicarious experience; direct observation and immediate contact are ready resources.

Like many other new areas of the curriculum, however, effective instruction depends upon teachers who know and appreciate the field. The following quotation clearly illustrates the plight of the average teacher when she faces the problem of helping children understand the significance and content of aviation:

> Greeting his pupils, the master asked:
> "What would you learn of me?"
>
> And the reply came:
> "How shall we care for our bodies?
> How shall we rear our children?
> How shall we work together?
> How shall we live with our fellowmen?
> How shall we play?
> For what ends shall we live?"
>
> The teacher pondered these words and sorrow
> was in his heart, for his own learning
> touched not these things.

The pre-service education of teachers should include a study of air transportation and its implications. Likewise, in-service education of all elementary teachers should bring enlightenment in this vast area, together with methods and materials for use with the children.

The very scope and nature of this field of human activity make it a center of interest, research and productivity which develops knowledges, skills and aptitudes in almost every aspect of the curriculum. Reading, writing, computing, scientific study and research, geography, social science, the creative and practical arts, and many other subjects are inevitable concomitants of aviation activities in the elementary school.

The Principal's Role in Air-Age Education

EVERETT T. CALVERT

Principal, Washington Elementary School, Pasadena, California

IN OUR modern world the elementary principal has a real responsibility in the area of air-age education. An educational program must be provided that will help children to adjust to and understand the air age in which we live. We no longer travel in a horse and buggy; so we must not provide a horse-and-buggy education designed for an isolated culture with very limited facilities for transportation and communication. Two aspects, in particular, of the impact of the airplane on our civilization must be fully understood, as well as the mechanics of aviation and air travel and transportation. First, the airplane makes it necessary that we learn to live and get along with all peoples peaceably if we are to avoid war and survive. Second, the richer life made possible by the airplane, if we use it for that purpose, needs to be understood in its manifold aspects. It is the principal's task, as well as that of other educators, to give educational leadership and meaning to such a program.

There are many ways in which the elementary principal can give educational leadership in air-age education. His *first* responsibility is to broaden his own experience and education so that he himself fully understands and is in step with this air age. A principal who has never traveled by plane or even been up in one, has never made gliders and model planes, or visited airports and control towers, or gotten into and seen modern aircraft many times, or talked with pilots and aviation experts, or has not seen many pictures and read much in this area is hardly in a position to give leadership to an air-age educational program. To get the feeling of this air age and fully understand it, he himself must crawl out of his buggy and into the airplane.

The principal's *second* responsibility in air-age education is to *encourage and help his teachers get a feeling for and understanding of this air age through direct experience and observation* also. This can be done by his own example, by visits to airports, by discussions in staff meetings, by getting speakers for meetings, etc. Yes, the principal has a myriad of other responsibilities in serving his teachers; but in this air age he must somehow get them to broaden their own experiences in this direction also.

A *third* responsibility is to *help teachers to improve their ways of teaching* and their ways of providing experiences for children which will help them to understand the world around them. This should be done through *democratic administrative and supervisory methods* and not through dictation which would

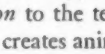
probably fail anyway. Some of the democratic procedures which will be of most help to teachers are given below:

1. Make your school a center of *air-age education materials* for teachers by tapping all available sources such as the CAA, professional publications, and the air lines.
2. Provide the *supplies and equipment needed for industrial arts activities at the time needed* (if at all possible). One of the greatest impediments to a modern educational program is lack of the right supplies and equipment at the time they are needed in the classroom.
3. Make it easy for teachers to take their children to airports, weather bureaus, etc. There is no adequate substitute in the school for the direct experiences children can get through well-planned *educational excursions.*
4. Secure the many *audio-visual aids* available and provide the equipment and facilities for teachers to use them with their classes. This can and should include moving pictures of all types, still-films and slides, transcriptions, dioramas, flat pictures, maps and globes, charts and diagrams, books, pamphlets, models, real instruments or parts of planes, when available, and so on.
5. Give teachers *visiting days*, if at all possible, to see what is being done elsewhere. This should include demonstration centers and exhibits.
6. Devote a *staff meeting* occasionally to a discussion of air-age education and include a good speaker when available to stimulate interest.
7. Utilize *individual conferences and visits* to the classroom to point out specific materials and ideas which might fit into their particular program.
8. Prepare *curriculum materials* which will be helpful and encourage teachers to do likewise. The airplane is influencing all phases of our culture, and these influences should be gotten into the materials of the various units of work and subject matter areas.
9. Encourage teachers to attend *study groups, meetings, classes, workshops, and summer schools* in aviation education to improve themselves.
10. Secure or prepare *helpful bibliographies* of both teacher and pupil materials.
11. Give *recognition* to the teachers who are doing a good job without putting them on a pedestal which creates animosity on the part of others.

These suggested democratic procedures for giving educational leadership to air-age education are, of course, the procedures a good principal uses in all phases of the educational program. But it is very important that we concentrate more effort on air-age education. Modern education must meet the challenge of the air age and not bury its head in the sands of the past if we are to survive and to realize the rich life which the airplane helps to make possible.

Just the old familiar greeting
Nothing new, but worth repeating--

MERRY CHRISTMAS
AND HAPPY NEW YEAR!



Current Efforts to Solve Aviation Education Problems

HOWARD W. SINCLAIR
H. E. MEHRENS

United States Civil Aeronautics Administration

[Mr. Sinclair is Director of the Aviation Training Staff; Dr. Mehrens is Chief of the Aviation Education Division.]

IT IS NOT the purpose of this article to make a case for air-age education. In fact the term air-age education, like the terms scientific education and progressive education, is used for the purpose only of centering attention upon a single aspect in education whose advocates believe deserves special emphasis. No educational practices should exist today which are not progressive in the sense that they are based upon the scientific findings of contemporary students of education. Neither should an education program exist today which is not suitable to a world that is undergoing rapid change in order to conform to the tremendous impact of a multitude of scientific inventions and discoveries. It is generally acknowledged that of all these inventions and discoveries the most significant is the airplane wing—the discovery which enables mankind to map his pathways through the unobstructed atmosphere rather than over the earth's surface and around its natural and artificial barriers.

There is no need to point out to you who read this article that the school is the instrument devised by society for the orientation of youth into society. As such the schools and the makers of educational programs need to be alert to events affecting society's structure and course of progress. Hence, the schools draw information concerning events and the influences of these from many sources, and the educators of this country interpret these events and influences for the schools' children and devise ways of incorporating such interpretations into the schools' curriculum patterns.

There *is* need for the readers of this article to learn of the efforts afoot to solve certain of the problems confronting education in this air-age.

Among the agencies which offer service to the schools relative to air-age education is the Civil Aeronautics Administration. This agency, close to the fountainhead of development in technical aviation, and to the sources of decisions in aviation policy, is in a unique position to provide such service. It is alert to the changes brought about in our ways of life through the increasing number of uses being made of aircraft, and it is cognizant of the impact upon social institutions made by both military and civil aviation.

During the past few years much in the way of experimentation in air-age education has been carried on. State departments of education have come to the assistance of teachers who would make use of the materials of aviation through publication of programs of air-age education recommended for state-wide use. The Civil Aeronautics Administration has helped with these educational experiments; it has provided consultation services to the several state departments of education; and it has undertaken, upon request from the institution involved, to assist with the implementation of state-wide programs.

Recently, two new approaches to the solution of the problem of air-age education have evolved. One relates to the teacher training aspect, the other to curriculum content and teaching method aspect. Teacher training institutions have been provided a cooperative service relative to establishing institute-workshop programs in air-age education. These are enriched and vitalized by visiting lecturers and field experiences. Initiated during summer school sessions, they are becoming installed by many colleges and universities as regular session activities. During the summer just past some 20,000 of the nation's teachers attended such programs. More than 5,000 of those attending institutions providing field experiences took their first airplane ride.

It is with a study relating to the second aspect of the air-age education problem presently underway that the remainder of this article will deal. Twenty-seven school systems are cooperating in an investigation, sponsored by the American Council on Education and the Aviation Education Division of CAA. This investigation is designed to determine what aviation offers appropriate to education and how such material can best be introduced into the program of studies or activities which the schools provide. This is not the place to describe this study in detail. It is sufficient to say that it represents every grade or progress level, and the principal elementary and high school subject matter fields. It is also necessary to point out that the study is concerned with the general education aspects of aviation. We shall speak of it hereafter as the Demonstration School Project.

During a recent inspection visit to several of the contributing school systems it was found that contributing teachers and their supervising principals were convinced that the outcomes of the study will prove of great educational value. Stories were told of how the undertaking has already solved the case of the "problem student." One of these students, a fifth grade lad characterized by the teacher as an extreme introvert, discovered a talent which when demonstrated to the group appeared to change his personality pattern. All his anti-social manifestations disappeared simply because he was given a chance to show his fellow classmates how to build an airplane structure from toothpicks and tissue paper.

There is a tendency on the part of many teachers to think of aviation's place in the school curriculum as a separate unit or a separate course. However,

it is the belief of those of us who are conducting the Demonstration School Project that aviation can be used to enrich every subject matter area and every unit at every grade level. Essentially, the study is planned to aid in overcoming the so-called "educational lag." When teachers learn how to interpret for special groups the reports of recent and current events of the air-age and how to incorporate these into courses of study, much will have been done to solve this major educational problem. The place of the CAA's Aviation Education Division in this study is to provide the reports of such recent and current events as these relate to aircraft and their uses, classified as they bear upon subject matter fields or functional problem areas.

Under the wise guidance of their principals and supervisors, these contributing teachers cannot be compared with the myopic farmer who insisted on riding backwards in his cart. He could not see where he was going and could only vaguely see where he had been. Teachers and principals who find a way to keep abreast of the times with their educational programs can never be indicted for lack of concern with the future.

The outcomes of this study will be published along with samples of the units prepared by the participating teachers. It is hoped that the example and inspiration provided by the schools of the Demonstration Project may encourage others to look not only to aviation but also to other currently emerging areas of the contemporary scene to enrich their programs.

The Elementary Principalship

In *School Board Journal,* April, 1948, appear several bits of "practical wisdom gleaned from A. A. S. A. addresses" at the Atlantic City meeting in February, 1948. Among them is the following:

> May I emphasize the bright future which lies ahead for the elementary school principalship? Rather slow to develop over the years, we see the elementary principalship today rapidly emerging as a highly professionalized position. It is of sufficient importance and its duties and responsibilities are of sufficient scope and magnitude to challenge the abilities of the most competent persons in the profession and to command a place among the professions which are selected by individuals as lifetime interests. The principal of the elementary school is the anchor man in education's eternal tug of war against ignorance, apathy, and evil. The elementary principal who can successfully discharge the tasks which he must assume today will command universal respect and will be recognized as the educational leader of the community.—J. C. LAUDERBACH

The National Association of Student Councils of the NEA has bulletins and handbooks on the work of student councils in the high school. Almost all activities and projects, however, may be adapted for use in an elementary school.

Progress in Room 202

GLENN O. BLOUGH

Specialist in Science and Aviation, Elementary Division, United States Office of Education, Washington, D. C.

"I FLEW in a DC-6 and it's got reversible-pitch propellers, a pressurized cabin, and an automatic direction finder," Bill Peters reports to his sixth grade class.

"DC-6's can go 300 miles per hour," John Short volunteers.

"They can go faster than that. That's just their cruising speed," Bill says. "I'll bet they can go 400 miles an hour, can't they, Miss August?"

Miss August is the sixth grade teacher. She blinks a little and says, "You've got me on that one, Bill. I'd like to know the answer myself. I know we could all get aboard one and fly from Chicago to San Francisco in seven hours and fifty minutes."

"And look at the states we'd cross," offers Jane Lane, looking at the map on the wall.

"Let's study about airplanes," Bill says, and all of a sudden Room 202 is bursting with enthusiasm.

There have been many changes in our elementary schools in the past few years. This conversation wouldn't have taken place ten years ago for several reasons. There has been great development in air transportation during that time and many a change in how we teach and how we select subject matter has taken place, too.

Our school curriculum is increasingly being adjusted to fit the interests, needs, and aptitudes of the learners. There is less following a rigid course of study and more adjusting material to suit the situations. There is more attempt to capitalize on the interests of pupils; more trying to serve their present and future welfare through school experiences. In schools today there is less telling of information and more helping pupils to learn ways to find information by guiding their explorations into solving problems of real concern to them. There is increased planning of ways and means by pupils and teachers and less dictation from behind the teacher's desk. There is more utilization of every community resource (places to visit, people to see, materials to handle) and less sticking to the pages. There is more attempt to make learning real by first-hand experiences and less stress on abstract learning for its own sake. These briefly are a few trends that show up when we examine the learning situation in today's elementary schools at their best.

So it is quite natural for the sixth grade to show an interest in airplanes and for them to expect to do something about it. Since it appears to be a real interest, Miss August and her pupils adjust their plans, pool their questions,

set up ways to answer them and then proceed. Pupils search to find materials, write for maps, plan a trip to an airport, read, experiment, check results, interview people, carry on discussions, invite a speaker to their schoolroom, and see motion pictures and slide films. They grow in ability to express themselves, to solve problems and check the results, to work together, to share experiences, to evaluate their effort, to see other persons' points of view; and they learn plenty about airplanes too.

It is indeed true that the world is getting smaller and the job of education is consequently getting larger. Bill Peters has 130 million close neighbors in the United States alone. His United States is only "11 hours wide." Even across the sea his neighbors have come close. Real experiences in the study of aviation will help him to understand his world and to become more adjusted to what we have called the "age of flight."

Today's society is complicated. Many factors combine to make it so. The more school experiences help pupils to understand this society, to fit into it, and to contribute to it, the greater is the progress toward really effective learning. Miss August knows that the curriculum in Room 202 is inadequate if it's not up-to-date in content and methods of instruction and she feels that aviation is one of the areas of experience essential to make it so.

Editor for 1952 Yearbook

The new member of the Editorial Committee of the Department of Elementary School principals selected by President Raymon W. Eldridge is Miss Helon Brixey, Principal of Brownlow Elementary School, Knoxville, Tennessee. Miss Brixey will assist in the preparation of the 1950 and 1951 Yearbooks and will be chairman of the Committee for the 1952 Yearbook.

Miss Brixey holds the B.S. degree in Education, 1934, and Master in Education, 1939, from the University of Tennessee. She is a member of Pi Lambda Theta, Delta Kappa Gamma, and Phi Kappa Phi. Besides being the very busy and successful principal of Brownlow Elementary School, Miss Brixey is president of the Executive Women's Club and 1948 chairman of the Department of Elementary School Principals of the East Tennessee Education Association.

Other members of the Editorial Committee now actively engaged in preparing yearbooks of the Department of Elementary School Principals are: W. George Hayward, East Orange, New Jersey (Chairman of the 1949 Yearbook); Julia McCarthy, Detroit, Michigan (Chairman of the 1950 Yearbook); and Roy E. Learned, Sacramento, California (Chairman of the 1951 Yearbook). The yearbooks are prepared with the assistance of the NEA Research Division, and Clayton D. Hutchins, Assistant Director, has been assigned to this special service.

The Practical Arts in the Air Education Program

EMERSON E. NEUTHARDT

Professor of Industrial Education, New York State College for Teachers, Buffalo, New York[1]

THE practical arts are today playing a major role in elementary school education. Teachers and administrators are cognizant that learning is at the optimum when experience activities are provided. They recognize that when information and the application of this information are fused, the learn-through-doing pattern is functioning in the true life experiences of the child.

The vision necessary, however, to apply and carry on these same teaching techniques to new areas in the elementary school curriculum is usually lacking and characterized by much delay. This is true in the application of practical arts activities to the air education program at the elementary level. A recent survey in New York State by the writer at the University of Buffalo revealed that most elementary school teachers are interested in air education but that the paucity of manipulative activities actually associated with it is appalling. I do not believe that this situation is a direct result of poor teacher interest in activities, because trends indicate that elementary school teachers do use and recommend many forms of manipulative practical arts activities in other subject areas. I do believe that teachers generally hesitate to experiment and do lack information as to the activities that can be used effectively with air education, and that materials and equipment are lacking in some instances. Teachers should keep in mind that the equipment and materials used to carry on other activities are also applicable to use with the air education activities because air education and its allied activities touch every subject area in the elementary school curriculum.

This broad pattern of subject area is fertile and rich in promise for a plethora of air education practical arts activities. It also provides the opportunity to develop new teaching techniques and activities in air education. Such a development is frequently limited by the degree of initiative and experimentation ability of teachers. Both these qualities are marks of teacher ability when adjusting the program to meet child needs. Some of the practical arts activities used in the air education program in the public elementary schools today are listed below. This is by no means an exhaustive list. It is presented in an effort to provide

[1] Mr. Neuthardt is co-author (with Gordon O. Wilber) of *Aeronautics in the Industrial Arts Program: a Handbook for Students and Teachers* (New York: The Macmillan Co., 1942), since 1942 the standard text in this field.

elementary school teachers and administrators with a few initial ideas that might grow into a full air education practical arts activity program.

CONSTRUCT

Pinwheels and propellers
Paper gliders
Hot air tissue bags
Model planes (scale, flying)
Models with movable controls
Kites
Wind sock, compass, air beacon
Large plane model (from boxes)
Aviation reading center
Thermometer
Weathervane
Parachute
Blimp
Model airport
Model weather bureau
Large globe
Dolls (representative of countries visited by airplane)

ILLUSTRATE

Types of aircraft
Camouflage of aircraft
Insignia of airlines and air forces
Parts of a plane
Courtesies of air travel
Transportation relationships
Flight rules
Air safety charts
Air route charts
Uses of the airplane
Aviation occupations
Frieze on air transportation
Countries visited by aircraft
Roller screen movie of flight trips

CONDUCT

Model plane contests
Model plane club
Aviation club
Aviation games and quiz contests

COLLECT

Flying seeds
Weather data
Air maps
Airplane news clippings
Aircraft pictures
Aviation items
Materials used in aircraft construction

SCIENCE

Soap bubble experiments
Balloon experiments
Air pressure experiments
Atmosphere experiments
Weather forecast experiences
Construct cloud charts
Construct weather charts
Construct celestial charts

DRAMATIZE

(Make scenery and costumes)
Historical events in aviation
News events in aviation
Occupations in aviation
Flight regulation agencies

VISIT

To airport
To weather bureau
To aircraft plant

Administrators and supervisors of elementary school programs should encourage teachers in practical arts activities by providing in-service training, faculty workshops, adequate practical arts guidance, supplies and equipment, so that teacher initiative, interest and morale will be maintained at a high level. Such a method would eliminate much delay in carrying out activities in air education and aid in the development of the whole child in the experience curriculum.

The organization of supplies and the various types of equipment is an im-

First Graders Construct An Airplane — *Campus School, New York State College For Teachers, Buffalo, New York*

portant part of the practical arts air education activity program. The organization that provides a teacher with the supplies and equipment at the time the need arises is the constant aim of good administration. Budget limitations also are among the problems with which educators must cope in their desire for education efficiency. No one classification of organization meets all these situations. Therefore, I present three possible organization plans to meet elementary school air education practical arts classroom needs.

I. The Practical Arts Laboratory—This laboratory can be defined as a room equipped for practical arts activities including supplies, equipment and working space so that classes might have the proper atmosphere, equipment and supplies available to meet class needs both individually and collectively.

II. The Practical Arts Classroom Unit—It is common practice today for the elementary classroom to contain—in addition to desks, chairs, blackboards, bulletin boards and book cases—a reading center, science center, social studies center, and others. I recommend the development of a practical arts center in the classroom that provides equipment, supplies, and working space for ap-

proximately six children at one time. This type of organization provides the means to keep manipulative activities on the go despite the limitations as to the number accommodated at one time. Such a unit is useful for air education activities; it is less expensive than the practical arts laboratory room and is well within budget possibilities of the average public school. On a long range plan, a predetermined number of these units can be added each year in order to keep within the dictates of the budget.

III. The Storage Room Laboratory—When these two organization plans are not recommended because of interest, space or budget, one of the vacant closets or storerooms found in school buildings can be utilized for storing supplies and equipment kits. Such an organization involves a minimum of expense and offers the opportunity for starting on a small scale. It gives the elementary school teacher an opportunity to borrow the equipment and supplies when needed in the classroom, and can be part of a plan that will gradually grow into one of the other organized plans.

In the final analysis, teachers through the medium of practical arts activities have the opportunity for developing relationships. The application of air education information to practical real life experiences is one illustration of such relationships. Only through cooperation and understanding can education achieve the reality of air education practical arts activities in the elementary school curriculum.

A School Supply and Equipment Distributor Says:

Buying teaching tools which will

——get the job done better with the children

——make every precious minute count with the teacher

——bring $1.00's worth of teaching aids for every 100 cents spent for merchandise

is a man-sized job for which we offer no preparation or training.

We train our salesmen to sell, but we overlook the importance of training our customers to buy.

There are dozens of items in the school equipment field which look pretty and cost little, but they fit only certain situations. Alas, too many of them are like the washing machine on the front porch of a home where there is no electricity—a monument to a glib-tongued salesman and a credulous customer.

How to buy! When to buy! What to buy where! A thesis, a yearbook, what a contribution this would be to better teaching and better returns for money spent—money which all too often comes out of the teacher's small salary to buy teaching tools for her own room.

Science Answers the Questions

MARJORIE H. CAMPBELL

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WHEN the teacher says, "What are the things you want to find out about aviation?" there is no waiting for a response; the children's questions come very fast.

What makes a plane fly? Why does a plane stay up in the air? What are the parts of a plane? What is wind? What is a cloud? The questions are formulated quickly and the children have a vital urge to solve their arising problems because the airplane is part of their own environment and their interest in it is keen. Surveys of questions of many classes have shown that they will draw on the fields of science for their answers. So, from the teaching standpoint, here is an opportunity to capitalize this interest in aviation for the teaching of many associated scientific principles.

Analyses of the questions of many classes have shown that they fall mainly into three large areas. The interest in the plane in motion or flying through the air leads to questions about the mechanics of the plane—the work of the elevators, the slope of the wings, the function of the propeller, the motor—the nature and uses of the most important parts and devices of the modern plane. The second area of interest in the flying plane produces questions showing the need of a better understanding of the functioning of certain physical laws and the interactions of forces that affect the plane in flight. The third large area of questions might, very generally, be called meteorology, a study of the weather, its physical features and their interactions, and of the physical features of the earth and their effect on flying conditions.

It is surprising how many parts of the plane, their names and functions, are known by many of the children. However, for those children who need help with this phase of the work, such items as models, toys, drawings, and books which can easily be collected by the children are of great value. An air-o-trainer, a model with movable parts, can be made by children of the intermediate classes and is very good for teaching plane parts. By handling the toys and models, comparing their parts with pictures and charts, and discussing them the children soon build up a background of understanding. A trip to an airport to see a plane at close range and to discuss its parts with men in aviation gives reality to the growing understanding. Drawing pictures, making charts, and constructing model planes and plane parts seem to be spontaneous outcomes.

The greatest interest of the children in the elementary school seems to center around mechanical flight. "How does a plane get up into the air?" and "How does a plane stay up in the air?" are questions always among the first asked.

Complete answers to these involve understandings of scientific principles beyond the comprehension of the elementary child; complete answers, however, are not necessary. There are certain observations and experiences well within the range of ability of younger children which will provide satisfactory answers. At the same time, this work will make the children more aware of some of the factors that influence the action of things in the air. To do this it is necessary to study some phases of air. Through observation, experiment, and discussion the child can become aware that air is a substance, that it has weight and pressure, that it offers resistance and that it may exert force when it is in motion. From a series of experiences in such areas and with definite applications of the learnings, a child may understand why a plane flies; without this background the explanation is quite impossible.

The teacher must be competent to give the fundamental background. Help can be had from elementary physics or general science books and from popular science magazines, where the theory of flight is a subject of common discussion.

Curiosity about the medium through which the plane flies, the air and its constant changing, is responsible for many of the children's questions. This curiosity leads to a study of weather, which is vital in aviation. It is rather difficult to experiment with planes in the classroom, but there are many simple experiments that can be performed in order to get better understandings of the weather. Observing and discussing the factors that make up weather, recording the daily weather conditions, checking weather forecasts for accuracy, finding the causes of wind, fog, clouds, and various forms of precipitation are activities that are most interesting and offer many learning opportunities.

Here again the study of air, its temperature, moisture content, and movements as well as the characteristics stated before are necessary to promote the work. The study of weather is pertinent to all grade levels. For example, the lower grade child may be interested in watching the clouds, their changing color, size and shape as they drift across the sky; the middle grade child may be interested in knowing how clouds form, the kinds of clouds and their height above the ground; while the upper grade child may be interested in the study of clouds as a means of predicting the kind of weather that can be expected due to particular cloud formations. A weather bureau set up by the older children becomes a center of interest and activity for an entire building.

For a more detailed study of aviation, it must be realized that a plane spends more time on the ground than it does in the air. This means landing fields, maintenance repair shops, flight planning, and other factors. Schedules open up questions of time, and time zones. Each phase has its own problems, many of which are essentially scientific. So it is evident that aviation is rich in opportunities for the development of scientific concepts; and, on the other side, science work is vital and necessary in order to answer the children's questions and to provide satisfaction and growth in significant understandings.

Aviation: Enriching the Language Arts and Social Studies Program

DOROTHY ESPENLAUB

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[Miss Espenlaub has been one of the most air-minded of principals in an aviation education minded state. She prepared the recently published *Wings Over Kansas: The Air Age in the Primary Grades,* and has assisted in the Civil Aeronautics Administration's Summer Workshop Program in Aviation Education at several of the Kansas teacher training institutions.]

EDUCATIONAL leaders have been telling us that our social thinking has not kept pace with our scientific knowledge. They have pointed out that it is only as we help children to comprehend the implications of these new inventions for ways of living that we can adequately lessen the lag between scientific improvement and social change.

With this thought foremost in mind, the teachers in Kansas City, Kansas, spent nine weeks studying the essential factors of weather and flight and the implications of aviation on our world today. This study was followed by a curriculum workshop in which the teachers developed an *Air Age Guide* as a supplement to the present course of study.

In developing the philosophy for this study guide, it was decided that one of the first aims would be to present, in accordance with the interest and maturity of the individuals involved at specific age levels, facts leading to a knowledge of the science of flight and weather. An effort was made to show the contributions from each subject field to air age understanding as it was felt that the most important aspect of the airplane is its effect on individual living and on world development.

The *Air Age Guide* is organized as an enrichment to the present school curricula. It suggests possible learnings and activities for children at each grade level and each grade builds on the preceding grades. A great quantity of material has been included so that each teacher can select those materials that fit the interest and maturity of the group. It places the teaching of a basic aviation unit in the third grade. This unit includes: (1) weather; (2) what makes an airplane fly and how it is controlled in the air; (3) the airport; (4) a trip in a plane; and (5) types of aircraft.

The primary grades provide a background for the teaching of this basic unit. Aviation source material taught in the primary grades includes: (1) kinds of planes and parts of planes; (2) personnel; (3) weather; (4) airports; and (5) safety. Aviation source material for the upper grades adds enrichment topics to the materials already taught. Such topics include: instruments, gasoline

engines, government regulations, navigation, history of aviation, and workers in aviation industry.

In order to guide and direct the thinking of children so that they will understand the implications of science on the world today, they must be given the necessary tools and skills with which to work. The language arts program is the teaching of tool or skill subjects. These skills include reading, spelling, and the use of spoken and written language. As teachers, we know that learning experiences which give real meaning and purpose to language expression are experiences in which the children are intensely interested and experiences which offer rich and varied opportunities for various types of expression. Aviation has been found to fulfill both of these requirements. Flight itself is a means of communication of measurable and steadily growing significance.

Teachers at all grade levels have found that a trip to an airport offers a variety of language experiences, such as:

Listening to stories about airplanes and the airport.
Telling about visits to the airport with family and friends.
Planning behavior standards—courtesy, and safety rules.
Talking to passengers and workers at the airport.
Listening to the guides at the airport.
Observing planes being serviced and passengers getting aboard.
Painting a mural showing activities seen at the airport.
Telling about the mural.
Making planes of paper and clay.
Building a model airport; playing with it.
Writing a letter to parents for permission to go.
Writing to the airport to plan the trip.
Writing thank you letters after the trip has been taken.
Writing reports and stories about the things seen.
Telephoning to make arrangements.
Collecting bus fare, keeping accounts, and paying the driver.

One first grade group of children, after a trip to the airport, wrote a series of stories which the teacher printed on charts illustrated with pictures drawn by the children. The stories were very simple, as:

Mechanics are busy at the hangar.
They check and repair the plane in the hangar.

The co-pilot helps the pilot fly the airplane.
He takes and sends radio calls.

We have found in studying aviation that great strides can be made in vocabulary development. New words are added to the speaking and reading vocabulary and new uses for words already known have been noted. Children have made picture dictionaries and illustrated encyclopedias of aviation terms.

Reading the newspaper and magazines for aviation activities led a fifth grade to a study of the newspaper and how it is organized.

A fourth grade teacher, when the business letter form was mastered, gave to each child the name and address of a company offering free materials. Not only had the children mastered a learning skill but they had the satisfaction of contributing a vast amount of material for class use.

In an upper grade remedial reading program, the teacher found that there were enough suitable books at all grade levels for all of the children to contribute information pertinent to the study of aviation even though some children were reading at second and third grade levels.

These are illustrations of some of the activities and experiences used by Kansas City teachers. Both teachers and children were most enthusiastic about their work.

The social studies program in the Kansas City, Kansas, schools has been built on "An Appreciation of Our Country" and "An Appreciation of the World." Concepts for post war living have been based on the ideas and ideals of world understanding. The shrinking world, global maps, great circle routes, and an understanding of the interdependence of the peoples of the world have been the predominant concepts stressed.

Interest in the primary grades is centered about the place of aviation in the local community. Concepts covered at these grade levels are:

The place of airplanes in Kansas City in providing work, carrying mail, people, food and machinery.
How airplanes help farmers or other workers.
Learning to make maps.
Locating places on the globe to which children have flown or have known about.
Visiting an airport.

Upper grade social studies concepts are based on the effect that aviation has on the ways of living, especially the economic and political interdependence of people. These concepts include:

Privileges and responsibilities of an individual in a democracy.
Interdependence of people in the United States.
Conservation of natural resources.
Care of public property.
The effect that new scientific discoveries make in the lives of people.
Appreciation of workers in an air age.
An understanding of global relationships—time, speed, space.
Living in a three-dimensional world.
Three types of maps for the air age.
Time zones.
Recent shift of importance of cities and islands.
Exploration of inaccessible places.

Similarities of basic needs of peoples.
Interdependence of peoples of the world.
Respect and appreciation for the culture and customs of our world neighbors.
How proper behavior establishes good relationships among peoples.
Adequate protection against diseases in other countries.

That children's interests are varied is shown in studies made by two sixth grade groups. One made a study of the history of aviation, learning that from earliest times man has dreamed of flying. Each phase from early Greek myths and from stories in the Bible to the present-day developments were illustrated in a picture time line. A report or story was written for each illustration. The children did a vast amount of reading, selecting information most suitable for illustration, and organizing the information gained into reports. At the completion of the unit, they had compiled an excellent history of aviation.

The other sixth grade group made a study of the place of aviation in the world today. The following is an evaluation written by the group at the completion of their study:

Our class learned these things in our aviation study:

Something of the science of flight and weather.
Some of the common types of aircraft and their uses.
The airlines that service the Kansas City area.
How to identify the types of planes used by the airlines.
The number of passengers and flight time for each type of airliner.
The airports and the services they offer to Kansas City.
Some of the measures taken for the safety of passengers: Weather Bureau, CAA, maintenance, personnel qualifications, design of plane.
The place that Kansas has had in the development of airplanes.
Present-day importance of the aviation industry in Kansas.
Some of the new planes being developed—jet, helicopter.
That we live in a three-dimensional world.
Global relationships. The size of the earth is measured in hours and minutes. Global routes. Importance of the Northern Hemisphere.
Getting acquainted with other people in the world—where they live, how they live; some of their folk songs and folk stories.
World organizations in use today: United Nations and UNESCO.

Is aviation study worth while? We think so. The experience of a sixth grade teacher on the first day of school this fall furnished us sufficient proof:

A child asked, "Do we start our aviation study today or must we wait until tomorrow?"

The group all looked at the teacher with questioning eyes. She knew that there could be only one answer.

"Today, of course," was her reply.

Mathematics in Children's Studies of Aviation

LORRAINE SHERER

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[Dr. Lorraine Sherer, as Consultant in Education for Caddo Parish, Louisiana, and Stanislaus County, California, commutes by air to these places from her residence in Los Angeles. She was a pioneer in developing aviation units in public schools while she was Director of Curriculum of Los Angeles schools. Dr. Sherer was Coordinator of the Project Staff of the *Aviation Education Source Book*. Her doctoral dissertation dealt with improving the mathematics curriculum in elementary schools, one aspect of which included the fusion of vitalizing aviation content.]

A GOOD title for this article might be, "How to Get Children to Learn Mathematics and Like It." A few findings from recent studies which deal with mathematics seem worth passing on to administrators and teachers. These findings were made in connection with aviation investigations, but they give clues to problems of general interest.

To teach or not to teach mathematics with units of work?—One group of investigators spent considerable time in finding out whether or not mathematics could be taught functionally in connection with aviation units of work in social studies, science, art, and the language arts. They found that it could if the subject matter and activities in these other fields were socially significant and suited to the maturity and interests of children.

In studying aviation, children in elementary grades use mathematics in two important ways during units of work: (1) in problem solving and (2) in communicating quantitative facts and ideas.

An examination of the activities which children use in getting, organizing, and using aviation subject matter shows that these can be grouped roughly as problem solving and communication activities. Activities used in getting information about aviation included such communication activities as field trips, use of audio-visual materials, and reading books, current periodicals, maps, schedules, and graphs. Activities in organizing and using information included such concrete problem-solving activities as science experiments, construction, dramatization, and dramatic play. Other modes of organizing and using information were drawing, painting, keeping bulletin boards, making diagrams, charts, maps, graphs, timelines, schedules, weather calendars, class books, illustrated reports, and such oral language activities as conversation, discussion, reports, and "broadcasts." These are largely communication activities in which problem solving functions in varying degrees.

It was found that different activities require different concepts and skills with number, size (measurement), form, and position. They also require dif-

ferent mathematical skills in computing, estimating, comparing, and measuring. The conclusion reached was that *the kind of mathematical program which can be developed with units of work depends upon the kind and variety of activities in the unit of work*. This is an important conclusion. It may explain why mathematics cannot be taught successfully in some school programs and can in others.

Analysis of children's activities during their studies of aviation brought out another important point. One of the greatest uses that children make of mathematics is in communicating quantitative facts and ideas. Much of this is oral. Children raise questions and talk about such quantitative aspects of their environment as interest them. One investigation shows that about half of the questions that children asked about aviation were quantitative questions. Most of these could be answered intelligently with little or no computation. Children's extensive use of mathematics in non-computational ways is well substantiated by research. Such men as Buckingham and Buswell have urged the inclusion of this type of mathematics for years. This whole area of quantitative communication, however, is entirely omitted or given scant treatment by most schools. The mathematics program should be broadened to include it. Children should be helped to learn to communicate quantitative facts and ideas effectively (1) in ordinary speaking and listening, (2) in everyday writing and reading, and (3) in such mathematical forms as graphs, maps, and tabular forms.

What kind of mathematical concepts do children use in communication?—Studies of children's questions about aviation show that kindergarteners and first graders asked mainly questions involving position, "Where?" and number, "How many?" Among second graders the questions were about evenly divided between number, "How many?" and measurement, "How much?" Questions asked by third, fourth, and fifth graders were predominatingly about measurement—how far, how big, how fast, how heavy, how much time, and so on. Speed and time took first place. This interest in measurement is confirmed by other research. Studies show that children's interest in measurement exceeds all other mathematical interests in the middle grades, the peak of interest being reached in the third and fourth grades. Interestingly enough, this is precisely the time when schools are concentrating on the mastery of abstract number combinations and processes. It looks as though some adjustments should be made if mathematics is to be practical and interesting to children in these grades. Aviation offers wonderful opportunities of helping children develop such important concepts as space, time, speed, and other aspects of measurement in which they are interested. Denominate number may then make sense to them. Measurement plays a significant part in both communication and problem-solving activities in units of work on aviation.

What about problem solving in connection with children's studies of avia-

tion?—The most vital problem-solving activities were construction, dramatization, dramatic play, and science experiments. These present concrete problem-solving situations in connection with doing things that children value. Children are self-motivated. Mathematical concepts and skills are developed functionally. Instruction and outside practice are helpful in doing things well. Mathematically speaking, construction and dramatic play have the highest priority rating in mathematical learnings: in problem solving, in communication, in the use of computational skills, in measuring, and in the development of concepts of number, size, form and position. This is interesting in view of the drubbing that construction and dramatic play have taken from adults concerned primarily with "the skills." Not all construction and dramatic play, of course, will yield these values. Data were used only from those situations in which children constructed small play-worthy reproductions of full fledged air terminals which they used as the settings for dramatic play over a sufficient period of time for them to understand how air terminals and air services operate, and how people use these facilities. A project of this scope and duration has continuity which permits children to grasp mathematical ideas and skills gradually through contact and actual use.

One example may demonstrate the kind of mathematics required in construction. Children in first grades made a small-scaled air terminal and its facilities. They encountered three main types of quantitative problems: (1) questions of size, shape, position, and number of things to be constructed; (2) problems of how to make the things they wanted to make; and (3) problems of time, materials, and methods. Three methods of measuring were used: comparison, estimation, and measuring with rulers, yardsticks, and tapelines. Linear measure was the only one used in construction, but it was used enough to develop understanding and skill. Form and position were sufficiently clear in the children's minds to enable them to reproduce reasonable facsimiles of sizes and shapes of planes, buildings, etc. Concepts of space and position were required in setting up the reproductions within the boundaries of an air terminal which was chalked on the floor. This latter is a map, concretely portrayed. Numbers used by these first graders in construction were small numbers, except for license numbers on planes. Children used numbers in rational counting, matching, recognizing and reproducing small groups, combining and separating small groups, counting by ones and by groups, and in reading and writing numbers. These experiences with number in concrete and semi-concrete situations sound as though they were built to order by mathematics specialists as a sound basis for understanding abstract number and arithmetical processes! The construction of model aircraft in the middle grades shows comparable mathematical values on a more mature level with greater computational requirements.

Dramatic play requires similar problem-solving techniques but somewhat different mathematics. Distance, miles per hour, flying speed, landing speed,

time, and direction become important. Ordinal numbers recur repeatedly in sequences of action, in the use of tickets, gate numbers, and flight numbers. Dramatic play and dramatization contain quantitative problems although they are essentially communication activities.

Construction and dramatic play present problems which are *real* to children. In these and other such concrete situations may be the solution to finding problems through which to teach problem-solving skills. Specialists have pointed out that many of the so-called problems given to children are "phoney" or unreal to children, and that textbook "problems" at best are only *examples* of real problems.

Aviation is of universal interest to children. It presents wonderful possibilities for use in teaching children what mathematics means and how to use it intelligently. Schools which do not include a comprehensive study of aviation somewhere in the elementary grades are neglecting some very fine opportunities.

We Try Our Wings

ELSIE WHITLOCK ADAMS

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ON A BUSY downtown corner one Saturday morning recently I saw two ten-year-olds utterly lost to the world. Spread out on the sidewalk were the contents of the model airplane kit they had just bought at the five-and-ten-cent store across the street. They were waiting for a bus, but the model kit couldn't wait. Passers-by smiled and stepped around the plan opened out on the pavement, the balsa wood parts, and the two boys whose interest and patient fingers would convert those bits of balsa into the plane that would take them in imagination into the blue.

In a first grade classroom the following Monday, eight chairs in a row, a high stool, and a broom handle were carrying a pilot and his passengers around the world. The passengers obligingly outspread their arms as wings and enthusiastically supplied the *z-z-z-zing* of the motors. Upstairs, two fifth graders were demonstrating the jet-propelled plane they had made of a test tube with cardboard wings and tail. Filled with vinegar and soda, tightly corked, and launched from a small inclined ramp, the brave little Shooting Star hurtled into the air on a record-breaking flight of five feet, three inches.

Here are our children, then, ready to pour their interest, curiosity, and imagination into the air-age experiences which we may provide for them. This

"Famous Firsts" *Sixth Grade, University Park School, Denver, Colorado*

may well be done through a unit of work which, over a period of a few days or many weeks, will be carried on from the standpoint of what it will do to and for our children. Through such experiences we will try to foster desirable growth in terms of attitudes and appreciations, habits and skills, interests and understandings. We will plan and carry out units of work in relation to the immediate interests and maturity level of the group—not pushing eight-year-olds into experiences and concepts they are not ready for, nor trying to cover the whole technical and economic world with the eleven-year-olds, but leaving each group with a forward look, a feeling that there are many more paths in this area to be explored.

With the fives, sixes, and sevens our responsibility may be just to provide a few simple materials and to enter into their dramatic play as they buy tickets, fly, crash (how they love to crash!) and fly again. A little later the children begin to ask questions about the plane itself: "Why doesn't it fall?" "What makes it go?" "How does the pilot steer it?" With increasing maturity the questions and the comments broaden. "How is it built?" "Who is up there?" "Where are they going?" "Sure brings other people closer, doesn't it?" "We had roses from Texas sent to us by air yesterday."

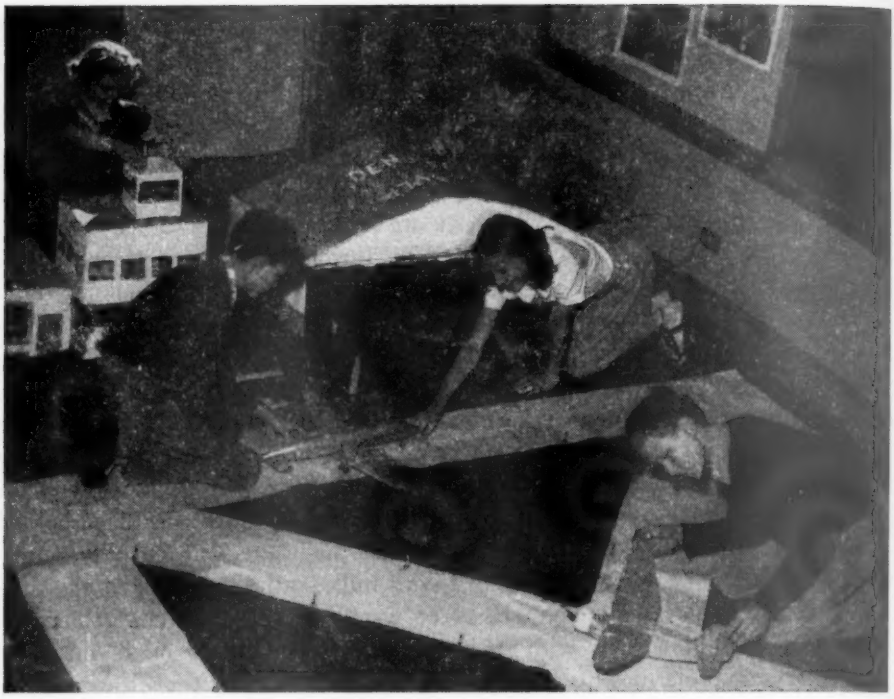
On the level of these interests, let us help the children to answer their ques-

tions, to seek solutions to a few of the problems they are sensing, to satisfy some of the interests which are of such concern to them that they want to do something about them. We discuss with the children what this unit of work will do for us, how it may influence our thinking and feeling and help us in the things we do. We help the children to word these objectives in terms so simple and direct that we can furnish concrete evidence of our growth toward them. Our interests and problems tell us where we are now; our objectives tell us where we want to go. How do we get there? Why, through the many and varied experiences which we provide and the materials which clarify and validate these experiences.

We gather books, charts, pictures, pamphlets (another article in this magazine proves how rich we are in materials to draw upon in this area), maps, globes, films, model planes. We arrange bulletin boards and keep them going with pictures, articles of current interest, and the children's own work. We plan a laboratory center where children in small groups may endlessly carry on experiments with the simple equipment and materials which they have helped to gather. How much easier to understand that air has weight and exerts pressure when we ourselves have proved it with milk bottles, hard-boiled eggs, tin cans, pieces of cardboard, and glasses of water. (Any elementary science or aviation text will help us with such simple experiments.) And because the elementary child clarifies his learnings and satisfies his need for self-expression through creative activities, we will try to have available the paints, crayons, poster paper, boxes, boards, and some simple percussion instruments and phonograph records for the original rhythms which may develop about the airplane, the wind, the propellers, or the airplane factory.

In our own preplanning, and in our continued day-by-day planning with the children and with the parents as often as possible, we will seize every opportunity for experiences in doing, making, experimenting, going places, and making community contacts. The children will read widely, study and interpret pictures, use globes and maps of different kinds, come together for frequent discussions, and record their information in various ways—keeping scrapbooks, writing and illustrating stories, making diagrams, graphs and charts, and keeping a daily log. As a group, and as individuals, we will visit the local airport (several times, with varying purposes, if possible); we will perhaps visit the science department of a high school to observe some demonstrations planned for us. Some lucky groups of children may be able to visit a Link Trainer center (and fly the Link!), go to a gas-model contest or an air meet of a local flying club. We will use available films, film strips, slides, phonograph records, radio recordings, and current radio programs when possible.

As the work gets under way the children will bubble over with suggestions, varying with the maturity level of the group, as to things they want to do: "Let's make a big airplane we can really get into." "Let's make an airport."



"We Build Our Own" *Fifth Grade, Edison School, Denver, Colorado*

"Can we make model planes?" "I'm going to design my own." "Could we make a wind tunnel?" "Let's write a play about flying. The girls can make the scenery and costumes." Through such experiences the children will have many opportunities to participate, to create, and to listen. When we think of learning in terms of behavioral development as the fostering of attitudes and appreciations, the building up of habits and skills, the stimulating of interests and ways of thinking, we realize that it takes place most effectively when as many avenues as possible are opened up, and that children learn through their five senses and through emotional and physical responses as well as through mental processes.

As we work our way toward the goals we have set up, we will continually evaluate our progress: through the things we do, the comments we make, the ideas we express, the way we work together, and the choices we make. We will use, as well, more tangible measures to appraise our growth: keeping group and individual records, asking for comments from home, planning and using informal tests of our own devising, gathering all possible bits of evidence as straws in the wind which show the way we are going.

Because we are doing and learning so much, we may want to gather together the threads of our experiences into a summarizing or culminating activity to which we will invite our parents ("My grandmother is coming, too.")

and other groups in the school. This summarizing activity will grow out of our day-by-day experiences and will weave into a pattern the children's creative efforts in art, English, and music. Together we may decide to write and produce a simple play, or to make and give a puppet show, shadow play, or movie. We may plan a panel discussion, a radio program, or an explanation of the picture map we have made. We may illustrate our ideas through wall hangings, murals, dioramas, peep shows, or shadow boxes, or may arrange an aviation parade, open house, exhibit, or a travel bureau.

Throughout the work we, as teachers, evaluate our own responsibility as guides and pilots. Each day we ask ourselves such questions as: "What experiences can I provide to meet better the needs of each individual child?" "How can I be sure that the ideas we gain from each experience lead to meaning and application in everyday living?" "How can I help the children to sense those social values and implications which are not beyond their ken?" We will consider each experience and activity in terms of the *meaning* it should have for them:

As they work on a model airport, are the children led not just to reproduce with boxes and paint and cellophane, but to understand and appreciate the work and services of a modern airport?

As Bob and Jim make an instrument for the Weather Bureau out of cardboard and an old watch mechanism, are they merely copying a picture of the instrument or are they understanding the principles of its construction and its uses?

As David importantly works on the flight plan he is making, is he just having fun pretending, or is he beginning to understand that back of a pilot's flight plan lies the work of men who apply scientific means in safeguarding the pilot and his passengers?

As Louise and Margaret demonstrate Bernoulli's Theory (how they love the importance of that term!) with a couple of clinking teaspoons and a breath of air, are all of the children helped to understand the way this principle is really working in many of the everyday things about us?

As we study something of the life of other countries in our imaginary flights, do we lead the children to sense some of the problems as well as the opportunities involved? In addition to thinking of the airplane as a modern magic carpet, are the children remembering that while one plane is carrying serum and food to a stricken community another is being designed to bomb cities half a world away?

Above all, we are helping each child to feel the thrill and the responsibility of being a seven-, a ten-, or a fourteen-year-old at the beginning of this new era of travel and trade with a whole world of opportunity, problems, and adventure opening up because of it? Will he make it, a few years from now, an era in which the airplane will foster friendships, promote security, and bring benefits in many areas of living? His are the hands which will be at the controls.

Texts, Films and Filmstrips, and Sources of Free and Low Cost Materials in Aviation for the Elementary Grades

THE FOLLOWING lists of twenty-five textbook entries, films and filmstrip listings, and sources of free and low cost materials were compiled by Lloyd L. Kelly, Education Division, Link Aviation; George Gardner, educational director, Pan American World Airways; Dr. John H. Furbay, director, Air World Education, Trans World Airline; Ray O. Mertes, director, School and College Service, United Air Lines; and Harry G. Zaritsky, chief, Audio-Visual Training Aids Division, and Dr. Frederick B. Tuttle, educationist, U. S. Civil Aeronautics Administration. Dr. Tuttle also served as chairman of the above committee.

We believe that this is the first selective composite listing to have been published in this field. We appreciate the willingness of the various aviation education interests to pool their observations and experiences in order to provide us with this set of references.

BOOKS FOR THE PUPIL AND THE TEACHER

Aviation Readers. New York, The Macmillan Co.:

Arey, Charles K. *Aviation Science for Boys and Girls*. 1944. 229 p. Grade 6.

Cohen, Rose N. *The Men Who Gave Us Wings*. 1944. 210 p. Grade 5.

Huber, Miriam Blanton; Salisbury, Frank Seely; and Gates, Arthur I. *Planes for Bob and Andy*. 1943. 352 p. Grade 3.

Lent, Henry B. *Straight Down*. 1944. 96 p. Grade 2.

———. *Straight Up*. 1944. 87 p. Grade 1.

Whipple, Gertrude. *Airplanes at Work*. 1944. 288 p. Grade 4.

Engelhardt, N. L., Jr. *Toward New Frontiers of Our Global World*. New York, Noble and Noble. 1943. 140 p. Intermediate and upper grades.

Fisher, Irving, and Miller, O. M. *World Maps and Globes*. New York, Essential Books, 270 Madison Ave. 1944. 168 p. Grade 6 to adult.

Garn, Doris. *The Test Flight of Sky Robin*. Cleveland, The World Publishing Co. 1946. Spiral binding. Grades 1 to 3.

Girl Scouts of the U. S. A. *Wing Scouting for Senior Girl Scouts*. New York, Girl Scouts of the U. S. A. In preparation (to be published in 1949). 150 p. approx. Grade 6 to adult.

Heinmuller, John Paul V. *Man's Fight to Fly: Famous World-Record Flights and a Chronology of Aviation*. New York, Aero Print Co. 1945 rev. 386 p. (Copies may be purchased from Somerset Books, 53 E. 34th St., New York 16.) Grade 5 to adult.

Hader, Berta Hoerner, and Hader, Elmer. *The Skyrocket*. New York, The Macmillan Co. 1946. 146 p. Intermediate grades.

Johnson, Eleanor M. *Pat, the Pilot*. Columbus, Ohio, Charles E. Merrill Co., Inc. 1946. 88 p. Grades 5 and 6.

Lenski, Lois. *The Little Airplane.* New York, Oxford University Press. 1939. 48 p. Grades 2 and 3.

Little Wonder Books. Columbus, Ohio, Charles E. Merrill Co.:

Johnson, Eleanor M. *Travel.* 1946. 36 p. (Little Wonder Book No. 101.)

Johnson, Maria Ellen. *Airplanes.* 1946. 32 p. (No. 113.) Grades 1 to 3.

Shane, Harold. *The Solar System.* 1946. 32 p. (No. 511.) Grades 5 and 6.

Thomas, A. Eleanor. *The Weather,* 1946 rev. 32 p. (No. 510.) Grades 5 and 6.

Williams, J. V. *Our Transportation.* 1946 32 p. (No. 304.) Grades 3 to 5.

Wolfe, Ruth. *Pioneering in Aviation.* 1946. 32 p. (No. 403.) Grades 4 to 6.

Neville, Leslie E. *The Aviation Dictionary for Boys and Girls.* New York, McGraw-Hill Book Co. 1944. 192 p. Intermediate grades.

Pease, Josephine V. D. *It Seems Like Magic.* New York, Rand McNally and Co. 1946. 80 p. Grades 3 to 6.

Potter, Norman, and Konicek, William J. *Fundamentals of Aviation.* Binghamton, N. Y., Link Aviation Devices, Inc. 1945. 107 p. Grade 6 to adult.

Powell, James D., and Clark, Ed. *Junior Model Planes.* New York, Thomas Y. Crowell. 1945. 96 p. Upper intermediate grades.

Raisz, Erwin J. *Atlas of Global Geography.* New York, Harper and Bros. 1944. 64 p. Grade 5 to adult.

Renner, George T. *Geographic Education for the Air Age.* New York, The Macmillan Co. 1942. 17 p. For the teacher.

Rotter, George E. *Jimmy Learns about Airplanes.* New York, The University Publishing Co. 1944. 49 p. Grades 3 to 6.

Sorenson, Frank E., and Rotter, George E. *Now We Fly.* Philadelphia, John C. Winston Co. 1944. 184 p. Grades 4 to 8.

Stanford University, School of Education. *Aviation Education Source Book.* New York, Hastings House, Inc. 1946. 855 p. (Prepared for, and in cooperation with the Civil Aeronautics Administration.) For the teacher.

Stevens, Alfred H., Jr. *The How of the Helicopter.* New York, Cornell Maritime Press. 1946. 58 p. Intermediate grades.

Tatham, Campbell. *The First Flying Book.* New York, Franklin Watts, Inc., 258 Madison Ave. 1944. 42 p. Primary grades.

University of Nebraska, Extension Division, Lincoln, Nebraska:

Exploring Aviation (Lower Elementary Series). Published serially in cooperation with the Teachers College, beginning 1944. Compilations available. Grades 2 to 4.

Exploring Aviation (Upper Elementary Series). Published serially in cooperation with the Teachers College, beginning 1942. Compilations available. Grades 4 to 10.

Van Zandt, J. Parker. *The Geography of World Air Transport.* Washington, The Brookings Institution. 1944. 67 p. (*America Faces the Air Age Series,* Vol. I.) For the teacher.

Wilber, Gordon O., and Neuthardt, E. E. *Aeronautics in the Industrial Arts Program; a Handbook for Students and Teachers.* New York, The Macmillan Co. 1942. 252 p. For intermediate and upper grade pupils and for the teacher.

Young America's Aviation Library. New York, Harper and Bros. Prepared by Aviation Research Associates. Grades 4 to 8.

How Planes Fly. 1943. 64 p.

Parts of Planes. 1943. 64 p.

Types of Planes. 1943. 63 p.

How Planes are Made. 1945. 63 p.

How Planes Get There. 1944. 64 p.

Planes in Action. 1944. 63 p.

Sources of Free and Low Cost Materials

[When writing to these sources, teachers should give their grade levels, so that they will not be sent materials that are too technical.]

Academy of Model Aeronautics, National Aeronautic Association, 1025 Connecticut Ave., Washington 6, D. C. Write for *Official Model Airplane Rules and Regulations,* and for information on forming model airplane clubs and on conducting contests.

Aeronca Aircraft Corporation, Middletown, Ohio. Write to Sales Manager.

Aircraft Industries Association of America, Inc., Shoreham Bldg., Washington 5, D. C. Write to both the Personal Aircraft Council and the Helicopter Council for pamphlets on airports, uses of personal aircraft, and helicopter developments.

Air Express Division, Railway Express Agency, 230 Park Ave., New York 17, N. Y. Write to Department of Public Relations and Sales.

Air Scout Division, Boy Scouts of America, 2 Park Ave., New York 16, N. Y.

Air Transport Association of America, 1107 16th St., N. W., Washington 6, D. C. Write to Director of Information and ask for *Air Transport, Facts and Figures.*

*American Airlines, 100 E. 42nd St., New York 17, N. Y. Write to Director, Air-Age Education Research.

Bellanca Aircraft Corporation, Bellanca Airport, New Castle, Delaware. Write to General Sales Manager.

Braniff International Airways, Inc., Love Field, Dallas 9, Texas. Write to Director of Public Relations and Sales.

Capital Airlines—PCA, Washington National Airport, Washington 25, D. C. Write to Director of Public Relations.

Delta Air Lines, Inc., Municipal Airport, Atlanta, Georgia. Write to Public Relations Department.

Fairchild Aircraft, Hagerstown, Maryland. Write to Assistant to the General Manager.

The Glenn L. Martin Company, Baltimore 3, Maryland. Write to Public Relations Dept.

*Link Aviation, Inc., Binghamton, New York. Write to Education Division.

Mid-Continent Airlines, Inc., 102 E. Ninth Street, Kansas City, Missouri. Write to Public Relations Department.

Northwest Airlines, Inc., 1885 University Ave., St. Paul, Minnesota. Write to Director of Advertising.

*Pan American World Airways System, 28-19 Bridge Plaza North, Long Island City 1, New York. Write to Educational Director.

Stinson Division, Consolidated Vultee Aircraft Corporation, Wayne, Michigan. Write to Advertising and Sales Promotion Department and ask for inserts of *The Business Men Who Fly Series.* Limited quantity.

*Trans World Airline, 101 West 11th Street, Kansas City 6, Missouri. Write to Director, Air World Education.

*United Air Lines, Inc., 5559 South Cicero Ave., Chicago 38, Illinois. Write to Director, School and College Service.

U. S. Air Force, Washington 25, D. C. Write Civil Liaison Division, Director of Public Relations for information on pamphlets, pictures, and news releases relative to the Air Force program and policies.

*U. S. Civil Aeronautics Administration, Washington 25, D. C. Write to Aviation Education Division; also to Office of Aviation Information.

U. S. Coast and Geodetic Survey, Washington 25, D. C. Write to Director and ask for latest *Aeronautical Chart Catalogue.* For obsolete charts, write to Officer-in-charge, Aeronautical Chart Distribution Office, 1325 Central St., Kansas City 6, Mo.

U. S. Navy Department, Washington 25, D. C. Write to Aviation Division, Office of Public Relations, for war surplus booklets used in training programs.

U. S. Weather Bureau, Washington 25, D. C. Address Chief, U. S. Weather Bureau, and request the *Educational Series on Weather*. This series is sent free to teachers.

*Has an educational service of experienced school men and women.

Films and Filmstrips

[Annotations of the films listed here may be found in *Film Bibliography of Aviation and Related Fields,* available from the Aviation Training Staff, Civil Aeronautics Administration, Washington 25, D. C. A key to the abbreviations follows the list.]

Air in Action. 16mm, sound, color, 1 reel, sale Coronet, rent Ken, NH, SC, Kan, FiP.

Air Scout Training Film No. 1. 16mm, sound, 59 min, sale or rent BSA.

Air Transportation. 16mm, sound, 11 min, rent or sale Mahnke, loan TWA, rent Tex, Mich, IntFB, IoS, Tenn, Neb, FiP.

Air Transportation, Freight. Filmstrip, silent, 57 frames, sale SVE.

Air Transportation, Passenger. Filmstrip, silent, 64 frames, sale SVE.

Airplane Changes Our World Map. 16mm, sound, 11 min, sale or rent EBF, rent Ken, Ill, PCW, Col, NH, NC, Conn, NJM, SC, Tex, Ea, WashCE, Geo, WashS, Mich, Wis, IoS, Tenn, AMNH, Kan, Neb, Cal, FiP.

An Airplane Trip. (Primary Grade Series.) 16mm, sound, 11 min, sale or rent EBF, rent Ken, Ill, Cal, Col, NH, Mich, NC, Kan, Conn, Tenn, Tex, AMNH, Neb, FiP, Geo.

Behind the Scenes at the Airport. 16mm, sound, 10 min, sale TF, rent SC, Tenn, Cal, FiP.

Children's Airport Excursion. 16mm, silent, 12 min, sale or rent Purinton, rent A&B, Ill, Tex.

Construction of a Light Airplane. 16mm, sound, 28 min, sale or rent PennS, rent Ill, NH, Col, PCW, Ken, Conn, NJM, SC, Tex, WashCE, WashS, Mich, IoS, Tenn, Kan, Neb, Cal, Geo.

Development of Transportation. 16mm, sound, 10 min, rent or sale EBF, rent Kan, Ea, Neb, Cal, FiP.

Famous Flights and Fliers (*Aircraft Series 16*). Filmstrip, silent, 51 frames, sale SVE.

Flight Over the Arctic. 16mm, sound, 10 min, sale Air-Age, rent Ill, Wis.

Global Concepts in Maps. 16mm, sound, color and B/W, 1 reel, sale Coronet, rent IoS, SC, Neb, FiP.

History of Air Transportation. Filmstrip, silent, 64 frames, sale SVE.

Of Men and Wings. 16mm, sound, 18 min, loan ITTCO, United Air Lines, rent WashCE, WashS, Cal.

Our Shrinking World. 16mm, sound, 11 min, sale YAF, rent AssocFB, PFC, SC, Ea, ITTCO, Mich, Cal, Ten, Kan, Neb.

Weather. 16mm, sound, 11 min, sale or rent EBF, rent CFC, Col, Geo, Io, IoS, Ken, NH, PCW, PFC, Tex, WashS, WashCF, Mich, Wis, Tenn, Kan, Neb, Cal, FiP.

What Is a Map? 16mm, sound, 10 min, sale TF, rent Wis, FiP.

Wings Over Latin America. 16mm, sound, color, 40 min, loan Pan Am, AssocFB, rent Cal, PCW, Col, IoS, Geo.

Wings to Ireland. 16mm, sound, color, 30 min, loan Pan Am, AssocFB, rent Ill, PCW, Col, Wis, Geo, IoS, Cal.

Wings to Viking Land. 16mm, sound, color, 30 min, loan Am Airlines.

Yellowstone and the Grand Tetons. 16mm, sound, color, 29 min, loan WAL.

Youth Takes to Wings. 16mm, sound, 52 min, rent Bray, B&H, IdP, TexVE, VES, Mich.

Youth Trains for Aviation. 16mm, sound, 1 reel, sale or rent Bray (also available in Spanish), rent Cal.

Key to Film Sources

A&B	Akin & Bagshaw, Inc., 2023 East Colfax Ave., Denver 6, Colo.
Air-Age	Air-Age Education Research, 100 E. 42nd St., New York 17, N. Y.
Am Airlines	American Airlines, 100 E. 42nd St., New York 17, N. Y.
AMNH	American Museum of Natural History, 79th St. & Central Park West, New York 24, N. Y.
AssocFB	Association Films, 347 Madison Ave., New York 17, N. Y. 1700 Patterson Ave., Dallas, Texas 19 S. LaSalle St., Chicago, Ill. 351 Turk St., San Francisco 2, Calif.
B&H	See UWF
Bray	Bray Studios, Inc., 729 Seventh Ave., New York 19, N. Y.
BSA	Boy Scouts of America, Visual Education Service, 2 Park Ave., New York 16, N. Y.
Cal	University of California, Dept. of Visual Instruction, University Extension Bldg., Berkeley 4, Calif.
CFC	See IntFB
Col	University of Colorado, Bureau of Audio-Visual Instruction, Boulder, Colo.
Conn	Audio-Visual Aids Center, University of Connecticut, Storrs, Conn.
Coronet	Coronet Instructional Films, Coronet Bldg., 65 E. South Water St., Chicago 1, Ill.
Ea	Eastin Pictures Company, 707 Putnam Bldg., Davenport, Iowa
EBF	Encyclopedia Britannica Films, Inc., 1150 Wilmette Ave., Wilmette, Ill.
FiP	Midwest Audio-Visual Company, 1804 Hennepin Ave., Minneapolis 3, Minn.
Geo	University of Georgia, Division of General Extension, Audio-Visual Aids Dept., Athens, Ga.
IdP	Ideal Pictures Corp., 26-34 E. 8th St., Chicago 5, Ill. 2408 W. 7th St., Los Angeles 5, Calif. 18 S. Third St., Memphis 3, Tenn. Bertram Willoughby Pictures, Inc., Suite 600, 1600 Broadway, New York 19, N. Y.
Ill	University of Illinois, Division of University Extension, Visual Aids Service, 713½ S. Right St., Champaign, Ill.
IntFB	International Film Bureau, 84 E. Randolph St., Chicago 1, Ill.
Io	Bureau of Visual Instruction, Extension Division, State University of Iowa, Iowa City, Iowa
IoS	Iowa State College of Agriculture and Mechanic Arts, Visual Instruction Service, Ames, Iowa
ITTCO	Film Center, 25 W. 45th St., New York 19, N. Y.
Kan	University of Kansas, Bureau of Visual Instruction, Lawrence, Kan.
Ken	Bureau of Audio-Visual Materials, Dept. of University Extension, University of Kentucky, Lexington 29, Ky.
Mich	University of Michigan, Audio-Visual Education Center, 131 North Hall, Ann Arbor, Mich.
NC	University of North Carolina, Film Library, Chapel Hill, N. C.
Neb	University of Nebraska, Extension Division, Bureau of Audio-Visual Instruction, Lincoln 8, Neb.
NH	University of New Hampshire, Audio-Visual Center, Hewitt Hall, Durham, N. H.

NJM	New Jersey State Museum, State House Annex, Trenton 7, N. J.
Pan Am	Pan American World Airways, Inc., 135 E. 42nd St., New York 17, N. Y.
PCW	PCW Film Service, Pennsylvania College for Women, Pittsburgh 6, Pa.
PFC	Princeton Film Center, 410 Nassau St., Princeton, N. J.
Purinton	Robert F. Purinton, 4404 42nd St., San Diego, Calif.
SC	University of South Carolina. Audio-Visual Aids Bureau, Columbia 19, S. C.
SVE	Society for Visual Education, 100 E. Ohio St., Chicago 11, Ill.
Tenn	University of Tennessee, Division of University Extension, Box 4218, University Sta., Knoxville, Tenn.
Tex	University of Texas, Division of Extension, Visual Instruction Bureau, Austin 12, Texas
TexVE	Visual Education, Inc., 12th at Lamar, Austin 21, Texas
TF	Teaching Films, Inc., 20 W. 20th St., New York, N. Y.
TWA	Transcontinental & Western-Air, Inc., Motion Pictures Division, 630 Fifth Ave., New York, N. Y.
United Air Lines	United Air Lines, Park Ave. & 42nd St., New York, N. Y.
UWF	United World Films, Inc., 445 Park Ave., New York 22, N. Y.
VES	Visual Education Service, 116 Newbury St., Boston 16, Mass.
WAL	Western Air Lines, Inc., Director of Advertising and Publicity, 6060 Avion Drive, Los Angeles 45, Calif.
WashCE	Central Washington College of Education, Office of Visual Education, Ellensburg, Wash.
WashS	State College of Washington, Bureau of Visual Teaching, Pullman, Wash.
Wis	University of Wisconsin, Bureau of Visual Instruction, Madison 6, Wis.
YAF	Young America Films, Inc., 18 E. 41st St., New York 17, N. Y.

Keep These Dates Open for

AASA REGIONAL CONFERENCES

Tentative Program of the
Department of Elementary School Principals

San Francisco, California—Monday, February 21, 1949
Luncheon and afternoon general session,
Rose Room, Palace Hotel

St. Louis, Missouri—Monday, February 28, 1949
Luncheon and afternoon general session,
Missouri Room, Statler Hotel

Philadelphia, Pennsylvania—Wednesday, March 30, 1949
Burgundy Room, Bellevue-Stratford Hotel

Watch for complete programs in
February, The National Elementary Principal

TENTH ANNUAL CONFERENCE ON ELEMENTARY EDUCATION

July 11-22, 1949

BOSTON UNIVERSITY, Boston, Massachusetts, has been chosen as the meeting place for the Tenth Annual Conference on Elementary Education sponsored by the Department of Elementary School Principals.

Whether you are looking forward to your first visit to Boston or have been there many times, you will find something to enjoy. Boston's historical and literary traditions and landmarks, its libraries and museums, its colleges and universities, its churches, theaters, shops, and restaurants have much to offer the visitor. Bunker Hill, "Old Ironsides," the Old North Church, and Feneuil Hall are but a few of the historical sites which make up the rich heritage of Boston's three centuries of existence.

Time—The Conference will be held July 11-22, immediately following the meeting of the NEA Representative Assembly in Boston.

Theme—"Skills Instruction in the Modern Elementary School."

Program—This tenth conference will be patterned after those of the past. There will be morning lectures and demonstrations and afternoon seminars. Dr. W. Linwood Chase and Dr. Donald Durrell of the School of Education of Boston University are making arrangements for visiting leaders in elementary education as well as members of the School of Education staff of Boston University to participate as lecturers and seminar leaders.

Credit—Two semester hours of college credit will be offered to all persons attending the conference. The fee will be $27 for tuition and a copy of the volume of proceedings of the conference.

Housing—Single, double and triple rooms will be available in the University dormitories. Special arrangements will be made for families. Assignment of rooms will be made in the order in which reservation deposits are received. A deposit of $5 (check made payable to Boston University) will reserve a room for you. Mail your check with the application blank to Miss Eva G. Pinkston, 1201 Sixteenth Street, N.W., Washington 6, D. C.

APPLICATION BLANK

Tenth Annual Conference on Elementary Education
Department of Elementary School Principals, NEA
1201 Sixteenth St., N.W., Washington 6, D. C.

I wish to become a member of this Conference. Enclosed is $5.00. Please make a reservation for me. (Make check payable to Boston University.)

Name .....
Address .....

Creating a Positive Health Attitude

ELIZABETH R. MAGUIRE
RAYMON W. ELDRIDGE

Lawrence School, Brookline, Massachusetts[1]

ALL children in the Brookline public schools enjoy health security in a program that is wide in its concepts, real in its application, and progressive in its growth from the past and in its eye to the future. The program is not a new idea; but it has been kept "new" by the amplification of old practices and the steady inclusion of modern trends.

From pre-school through the high school grades, there is a continuity of service that includes examination, vaccination, inoculation, consultation, recommendation, visitation, first aid, and follow-up—with a carefully and completely kept case-history cumulative record card that is usable and really used by the medical director, nurse, teacher, and administrator.

Perhaps the only way in which an easy delineation of the program can be shown is to set up a case history of "Little Joe"—we have a very little Joe in our building today; he has just completed the first grade and has had his introduction to the procedure, the remainder of which can be projected.

Joe has already had, of course, his pre-school physical examination which included heart and chest, nose and throat, teeth, glands, mouth, nutrition, posture, spine, and feet. If he had not been vaccinated earlier, it would have been done then; but Joe's mother had had this done, as well as whooping cough, diphtheria, and tetanus toxoid inoculations when he was less than two years old. So, along with the record of his first physical examination in the school, Joe's immunizations were entered on the cumulative card—the first anecdotal record of his fitness and of his family's interest in his health.

This pre-school practice brings an immediate friendly relationship and acquaintance to the children with the doctor, nurse, and kindergarten teachers, all of whom take part in this first visit to the school.

As a coordinated practice, if Joe had been within the entrance age limits but younger than the chronological admission range (children are admitted to the kindergarten who are four years and nine months old on or before October 1, or by test if they are between four years and three months and four years and nine months on October 1), this physical examination would have become an integral factor in the decision on admission, plus a judgment by the physician of his emotional stability.

Early in the school year, in kindergarten and each year thereafter, Joe did

[1] Miss Maguire is the school nurse and Mr. Eldridge is the principal of Lawrence School.

and will take part in the same examination, plus height and weight measurements twice a year (with a card sent to the parents on which the current figures and interim changes are stated), and eye and ear tests which begin in grades two and three respectively. The audiometer is, of course, used for the ear testing.

The annual examinations are given by the medical director and a corps of well-qualified pediatricians during September and October, and for new pupils whenever they enter throughout the year. The nurses make all of the preparations with the principals in the schools where they are regularly assigned, and through special assignment give assistance to each other at the times of examination.

In the kindergarten, Joe's teacher and the nurse filled in a pamphlet, the *Personality Appraisal for Kindergarten Children,* which was developed locally by a committee of kindergarten teachers, nurses, and the Director of Child Placement. Two of the four pages devoted to this study of each individual child are given over to Health (history—from birth, including illnesses incurred; habits—covering a wide range from sleep to thumb-sucking); Parents and the Home (marital status, economic status, children, neighborhood, parental cooperation); Physical Development and Control (sensory, speech, motor, size and appearance, lateral dominance). One-half of a third page is given to Emotional Development and Control (stability and self-reliance).

Much of this information is stated in checklists, but other entries may be anecdotal. It is not a necessity to have a complete history for every child; but whatever can be learned is added to the store of available information. In cases of noticeable deviation from the normal in physical, emotional, social or mental status, every effort is made to get the whole picture. The immediate interest and action engendered through the acquisition of such a background picture can be most beneficial; in addition, the follow-through is equally important in that these "biographies" are sent along to the first grade teachers to assist in a better understanding and treatment of those children who may need unusual attention.

Joe seemed in grade one to be indifferent toward reading; his mother and his teacher discussed his reactions; the nurse was asked to enter the picture. While eye tests are not yet regularly given until grade two, an individual test was made on Joe which showed enough variation from the normal to enable the nurse to request the mother to have an oculist make a further examination. Adjustment of the case is under way

Each year the opportunity for Schick testing is offered. Joe's family wished to have him checked in the first grade, even though he had been immunized against diphtheria several years earlier. This was done in February; the resultant reaction required further inoculation which was given by the school physician with the permission of the home.

As stated before, Joe will continue to have these annual opportunities as he goes from grade to grade through high school. In addition, when Joe is ready to take part in athletics in both the elementary and the high school, he and his record will be examined to determine his past and present fitness to participate, with an added investigation into any possibilities of hernia. He will also have the opportunity to take patch tests and X-rays of the chest as a tuberculosis check-up in at least grades seven, nine, and eleven; and in grade twelve the entire student group is X-rayed.

In order to determine special strengths and weaknesses as Joe grows up, a physical fitness index is taken annually by the physical education department, beginning in grade six. Again, this index becomes a recorded fact on the cumulative health card as a part of the picture of the whole child. Special exercises, and later special placement in physical education classes if necessary, are given to needy cases as shown by the index and upon recommendation of the medical director and the nurse in consultation with the physical education department and the school administrator.

Whenever Joe scrapes his knee, cuts his finger, or has a stomach-ache, the nurse is available to remedy the situation. If, by chance, he needs dental attention and his family is unable to provide it in accordance with a pre-determined measure of ability to pay, there is a dental clinic which was established by the Board of Health in 1917 for use by the schools for its pupils in grades one through three. After grade three, Joe may be cared for through a fund provided by our teachers' club which also makes available assistance in securing glasses for needy children.

Every child is also given at the beginning of the year a dental "certificate," issued by the Massachusetts Department of Public Health, which he is asked to return at some time during the school year signed by his dentist in token of the completion of all necessary dental work. The return in our school during 1947-48 was 81 per cent of all pupils, due cooperatively to the interest of the children, the cultivation of the habit by the nurse, and the direct participation in the activity by the teachers.

The cumulative health record card, in addition to the data concerning examinations, has also items to be checked for all diseases encountered, all injuries of any consequence, all operations; and in space provided on the back of the card much anecdotal material is entered.

Interested citizens of Brookline set up many years ago a fund through which anonymous donors have contributed year in and year out sufficient money for the provision of milk and food for worthy cases. Since we operate on a one-session plan with cafeterias in the schools, this has been a noteworthy and invaluable service by conscientious citizens. The fund is distributed by one of the nurses, who confers with the principals and other nurses in determining the proper recipients.

Immediately following the annual physical examinations, and after the eye and ear testing, the nurse reports first to the principal in her building and then confers with each teacher to explain all situations and procedures necessary to have a clear conception of limitations, activities, and desirable watchfulness. Daily conferences between principals and nurses are held for the discussion and investigation of pupil absences, the incidence and variety of illnesses, and plans for action in indicated exigencies.

Recently, a speech correctionist has been added to the staff of the schools in the Department of Child Placement. She deals remedially, upon recommendation of the principal and nurse, with children whose habits of speech are deficient not only through natural but through acquired difficulties.

At the time of the pre-school examination, Joe's mother received from the kindergarten teacher a four-page pamphlet which offers pertinent information concerning all factors of importance in the entrance into school life. This booklet, *Ready for School,* is issued over the signature of the Superintendent of Schools as an evidence of his personal concern and includes paragraphs on social and emotional maturity, physical readiness, pre-school check-up, and meeting the school nurse.

In our school, Joe's mother was also given on the first day of school in kindergarten and grade one—and will be given in succeeding years—a booklet, *Your Child Goes to Kindergarten in the Lawrence School* (or, *the First Grade,* and so on), that runs from five to nine pages in length and contains for each grade a discussion of our intentions in the year's work, general information as applied to the needs of the grade, and material devoted to health.

Our instructor of domestic science (in grades seven and eight), who is also in charge of our cafeteria, extends her classroom activities throughout the school by periodic visits during the year to each classroom from grade one through grade eight for the purpose of presenting ideas and materials relating to good food habits in the knowledge of food values, proper choices of foods for balanced meals, and common courtesies in the use of the cafeteria. The response has been worthwhile in the resultant discrimination displayed by the children.

Brookline, with its present school population of more than 6,000, has grown steadily and rather quickly in recent years. The first step in health control was taken in 1902 with the appointment of a doctor to each school building as an inspector for communicable diseases. They went into their schools for this purpose alone, on Mondays and Thursdays only. In 1906 an annual survey of teeth and throats was begun, but this was abandoned five years afterward. Later, medical inspectors, under a chief medical inspector, were selected to give physical examinations.

In 1921, a pediatrician was appointed as a full-time medical director. He is assisted in the annual and pre-school examinations by a staff of six pediatricians.

Brookline is fortunate in that during all the years between 1921 and 1948 one director, Dr. David M. Hassman, has been at the head of the work in its basic and expanded endeavors; through his efforts and foresight, coupled with the excellent services of registered nurses who have been interested enough in their field of work to remain in it over long periods of time, our schools have maintained a progressive stride in the development of health practices.

The medical director is on duty daily from 8:30 A.M. to 2 P.M. and is on call throughout the afternoon—our school sessions cover the period from 8:30 A.M. until 2 P.M., with play periods and athletics as well as shop work and the like continuing through the remainder of the afternoon. The duties of the medical director, if they were to be listed, would appear to be: physical examinations of all children from kindergarten through grade twelve; pre-school examinations; diphtheria prevention; tuberculosis testing; examinations of those seeking work certificates (in our state, up to twenty-one years of age); the care of children and school personnel in cases of illness and accident during the school day; check-up of communicable diseases; the care of books, clothing, and materials in connection with communicable diseases; the care of accidents during after-session school-connected activities; the sanitary inspection of school buildings; the examination of candidates for sports activities; and the examination of teachers.

The nurse has been a part of the public schools' program in Brookline since 1909, when the first was appointed. Now there are seven, assigned to one or two buildings each in accordance with the enrollments in the several schools. From the narrower conception of the field of work, the nurses' duties today include the following: health education work with pupils in and out of the classrooms; the check-up of communicable diseases; assistance in physical examinations; the follow-up of defects found through home visits; the weighing and measurement of all pupils twice yearly and the preparation of the cards which go into the homes; assistance to teachers in the testing of eyes and ears, plus home visits when defects are found; participation in tuberculosis testing and diphtheria campaigns, acting as a liaison between school and home in building an awareness of the need for tests and action; the care of minor accidents and illnesses; the maintenance of the cumulative record cards; assistance to teachers in the provision for proper seating of pupils with defective hearing or vision; home visits to learn about illnesses and to create in the minds of the parents an understanding of adequate child health as a common bond between school and home; help to teachers in understanding the homes of the children from emotional, physical, and environmental points of view; guidance to teachers in maintaining a healthful school environment through adequate attention to cleanliness, lighting, temperature, ventilation, and other factors; instruction to children in the understanding of the necessity for and uses of certain measures in meeting emergencies as they occur; assistance in making health surveys; co-

operation with the principal and the medical director in establishing policies pertaining to home and school relationships; participation in parent-teacher groups as a speaker and as a member to interpret the health program; encouragement of parents to accept home visits or to visit the school clinic.

Without trying to evaluate the total program or to list a long series of accomplishments, it is interesting to present the following few facts and figures as evidences of a growing school health program and a satisfactory public response:

Our school population at the time of the first appointment of a doctor for work in the schools, in 1902, was 3,703; at the time of the employment of the first nurse, in 1909, there were 4,268 children in the schools; 5,163 pupils were under the care of the medical director when his position was created in 1921; in 1948, with the medical director, seven nurses, and part-time assistance from six pediatricians when needed during the year, we have 6,238 in the public schools.

Between 1923 and 1948, over 28,000 children have been given diphtheria tests, with more than 9,000 being given protective inoculations.

Since 1936, more than 10,000 pupils in grades seven, nine, and eleven have received tuberculin tests with X-rays being given to positive reactors. In recent years, the students of grade twelve have taken the X-ray program as a group.

Nurses average 3,000 calls each year to the homes of pupils.

Cafeteria workers are given X-ray and general physical check-ups.

All teachers are given physical examinations by either the medical director or the family physician before receiving their original contracts and before going on tenure.

In 1947 the number of visits to the dental clinic was 1,297 made by a total of 295 children; 200 were fitted to glasses; and 579 pre-school examinations were given.

We hope that we may continue to find still more avenues of approach toward building a completely healthy child in a healthful environment.

The Department Cooperates in Health Study

A number of elementary school principals' clubs and associations have been asked by the Department of Elementary School Principals to cooperate with the Planning Committee of the National Conference for Cooperation in Health Education in formulating a guide to be used in studying the functions of the classroom teacher in the school health program.

When this study guide is ready, it will be sent to principals and teachers all over the country for their consideration. It is hoped that through the process of wide group participation in this study the health program may be enriched and implemented. The results of the study may serve as a basis for a national conference or a publication.

Parent-Teacher Understanding Through Visitation

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ANY effective classroom study of the people of another nation includes becoming familiar with the home country of that people; physical environment has an important bearing on the lives of the inhabitants. Similarly, any teacher who is becoming acquainted with the pupils in her classroom, who wishes to lead them in their spiritual, moral, mental, social, and physical advancement, and who wishes to be accepted as a leader and friend of her pupils, must of necessity establish an intimate home-school relationship. In comparison, a home has an even greater influence over a child than a country has over the people residing in it.

The teacher is engaged through the local superintendent or the board of education as *a representative of the parents* to perform a certain portion of the training of their children. The *original responsibility of the training of a child is placed on the parents,* not in the officers or members of a school district, a county, city, or state. A knowledge and acceptance of this fact emphasizes the importance of an acquaintance and understanding between the home and the school. The training of a child has begun long before he enters school—in the home, community, and the church. The school must therefore continue and supplement this training in some harmonious and cooperative method. A child cannot be expected to develop a pleasing and desirable personality as a whole, capable of clear and straight thinking, free to express himself candidly, if in the home, church, school, and community four standards of behavior are serving as models, or if the child is guided by a multiple means of control. Obviously, a teacher cannot vary the classroom program sufficiently to continue the training of each individual child as he has been trained heretofore. However, a mutual acquaintance of the parents with the work of the school in the classroom and of the teacher with the parents and home conditions of the child serves to bring about a better understanding of the individual differences of the pupils and greater cooperation between the classroom and the home.

Teachers Should Visit the Pupils' Homes—The most direct and effective way of establishing this intimate home-school relationship is to have the teacher visit the homes of her pupils. Such a visit should not be the formal, professional kind; it should rather consist of a brief, social call. The teacher has an opportunity to introduce herself as a fellow individual, to show her interest in common everyday events and facts, and unobtrusively to give the parents in-

formation concerning herself if she is not well known in the community. She has the opportunity to acquaint herself with her pupils, their parents and other members of the families. She will thereafter be a definite individual to the family rather than just a teacher; the members of the family will become definite persons to the teacher rather than just a pupil or parents. School matters need not, and in many cases should not, be a topic of conversation. It is true that there are many other opportunities for teachers and parents to become acquainted, such as parent-teacher meetings and similar gatherings. These are good supplementary means of becoming acquainted but do not take the place of the home visit. On most of these occasions it is possible for a teacher to meet only a few of the parents, and usually those are the ones the teacher already knows and needs to talk with least. Also, on these occasions the teacher does not get the complete picture of the child in his home-social-physical environment. The community in which the child lives often explains much about his individual reactions. Such factors as social status, educational level, financial condition, influence of the church and religion, recreational practices and facilities, and esthetic development of the family are paramount in obtaining an understanding picture of the pupil involved.

Parents Should Visit Their Schools—As someone has stated, a board of education often requires its superintendent to visit all schools in the system at regular intervals, but does not make the same requirement of the parents whose children are being educated. When someone is employed by us, we usually inspect his work to determine whether it meets our requirements. Parents should certainly want to know about the work of their children at school. Some schools plan visiting days or week; often parents are present for one or more culminating activities at the completion of a unit of work. Undoubtedly the most profitable visit a parent can make is on an "ordinary" day when activities progress in their usual way. Parents will be much better able to understand certain requirements made by the teacher, difficulties their children may have, the enthusiasm of the pupils in a certain project or work done, and the entire school situation if they can observe at different times their children at work and play in the school situation.

Nearly all difficulties are the result of misunderstanding. Parents listen to a child's complaint of some condition or occurrence at school and draw conclusions without understanding both sides of the question or the reason for such condition. Teachers react to complaints of parents without realization of their deep personal interest and concern about this particular child. If parents and teacher knew each other better personally and could be friends in the real sense of the word, they would in most instances be able to understand each other's actions or, at least, be willing and able to eradicate any difficulties through a private discussion. The reactions of the child would be greatly improved if he never heard his parents talk disrespectfully of the teacher.

These facts are particularly applicable in the understanding of pupils of unique groups. Often prejudices and misconceptions can be minimized if in some indirect way a teacher can discuss with the group certain religious beliefs which distinguish them from the other children. In this discussion, certain practices and dogmas in the religions acceptable to the majority which are as unusual as those found in the religions of the minority group can be mentioned and compared. The similarity of these religions in other respects, if pointed out, might be surprising to many children. The principle of giving credit to the individual who is bold enough to back up his convictions, whether in conformity or at variance with those of his associates, can be strengthened. The teacher's knowledge of these conditions and beliefs as they exist in the homes of her pupils will undoubtedly assist her in making plans to avoid or handle any such difficulties. An intimate home-school relationship will lessen difficulties that may arise if children of foreign-born parents are enrolled in a class. Greater confidence is developed between these pupils and their teacher if the former realize that their teacher practices the same social relationship with their parents, even though they represent a foreign element, as with the parents of other children. The teacher sets a practical example for her pupils to follow. Class discussions effectively placed where appropriate in the school program can be used to refer to special contributions made by people of the nationality involved, to give interesting information regarding these nationalities, and to sponsor better relations among the pupils of the different national backgrounds. A realization that all non-Indians in our country came at some time or other from a foreign country often tends to change attitudes of the young minds. Having these children, their parents, or some other members of their family make some special contribution to the school program, such as a song in their native language, a talk about some unique feature of their country, or an exhibit of articles or pictures portraying some form of life in that country may serve to interest the other pupils in these foreign pupils and give them some encouragement. These are only two examples where proper teacher-home relationship may result in more matured spiritual growth in the pupils. The ill effects of racial differences, financial statuses, and many other variations can be lessened by a teacher who understands the problems involved and takes some effective means of counteracting them.

All worthwhile endeavors have difficulties connected with their execution. Parents may react unfavorably because of the mistaken notion that a teacher visits a home only when there is some special difficulty at school. This fault can undoubtedly be laid at the door of the teacher who has been practicing such visiting in the past, or of the administrator who expects too much work from his teachers, which doesn't allow sufficient time for social visits. Some teachers hesitate to enter proverty stricken homes, homes that are below standard in cleanliness, or homes that have an ill reputation. Others are troubled by a few

homes of wealthy people where the butler comes to meet the teacher at the door. One never avoids trouble by running away from it. There is no reason why a wealthy father or mother cannot have a social call with the teacher. Other difficulties and disadvantages might be mentioned; most of them can be overcome by tact. If the practice doesn't succeed in all cases, it may still be profitably applied in most cases.

AP Photo *21 De Berri, Paris*

A CARE Package is Received

The first grade children of the Carmel Central School, Carmel, New York, put together their pennies and nickels until they had enough to buy a CARE food parcel for a French child. They also sent along a picture book, much of it written by hand. In France, the package and book went to six-year-old Michel Toulemont, a first-grader in the school at 11 Rue d'Argentliul, Paris. Master Michel, above, receives his presents from teacher Mme. Francine Davy, while his friends look on in admiration. Like other French school children, Michel has to concentrate pretty hard to keep his mind on his studies, rather than on his stomach or on the temperature in the classroom.

Blanks for ordering CARE packages are being sent to all Department members again this year. Your generous response last year was very gratifying.

Democracy in School Reporting

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PUPIL reports have as their major aim that of reporting to parents the progress of the pupils in the schools. Just what form such reporting will take is left to the school system serving the particular community.

It is true that school systems often neglect to practice the very principles that they teach in their program of studies, one that is emphasized so strongly—democracy as a way of life. Instead of meeting this major aim of reporting to parents, we as school people often select the traditional form of report card, adopt one used by some other school system, continue one that has been used for a number of years by the particular community, or even purchase a standardized form that is handled by a local supply house, without giving primary consideration to the needs of the particular community or school system in our reporting.

Does your reporting to parents meet the major aim of reporting? Does it tell the parent what he wants to know about his child? Have you been democratic in selecting or developing the reporting form that is being used in your school system? Or, have you been guilty of one of the procedures mentioned above?

True democracy in reporting must of necessity follow the lines of incorporating the best thinking of the administration and the teaching personnel, the wishes of the school patrons in what they desire the report to portray about the progress of their children—all in the light of the philosophy of the particular school, if it is to be a satisfactory reporting system. The wise school administrator will make changes gradually but as and if needed, and as the school program and public approval seem to warrant. In such a revision it is true that you will not develop a report card that is satisfactory to everyone and you probably will not develop one that is entirely satisfactory to any particular group. As Wrinkle points out with regard to the improbability of an existing perfect report form: "I have not seen one and I am sure you haven't. I doubt if there is one. For what might be good in one school might not be good in another. Each school has to work out its own forms and practices on the basis of its own objectives, its own philosophy, and its own staff."[1] Yet, through such a process of reporting that incorporates the thinking of all those concerned, school administrators will have gone far in practicing democracy in school reporting.

[1] Wrinkle, W. L., *Improving Marking and Reporting Practices*, p. 4. New York: Rinehart and Company, 1947.

The report that follows shows the procedure in the Jackson, Mississippi, public schools in recent months, incorporating the thinking of the school faculties, the school administration and the school patrons in revising the reporting system in the elementary schools, grades one through six.

The problem of revision was prompted by a general dissatisfaction on the part of both the teachers and the school patrons of the reporting system in use. The matter of revision was presented to the school personnel through the assistant superintendent of schools in a joint meeting of all instructors and administrators of the elementary schools. After the presentation, the group divided into grade meetings to elect one representative from each grade to membership on a committee of revision. Likewise the principals elected one representative, as did the administrative offices and the City Parent-Teacher Council. Thus the committee was composed of representatives from each of the six grades, the principals' division, the administrative offices, and the patrons—a total of nine members. A chairman was elected from the representatives and the committee immediately formulated plans for proceeding. Meetings were held at regular intervals and all members were instructed to represent the thinking of their particular group and not that of themselves alone. Surveys were made of the literature in the field, reports of other school systems, the philosophy of the schools, the thinking of teachers, principals, and the central office administration, and primarily the requests of patrons as to what the card should portray.

The final report recommended and adopted for the current year represents many hours of discussion, review, research, and "give and take" on the part of individual members of the committee. Obviously there was no complete unanimity of opinion, but after consideration of all proposals there was a general agreement on the form submitted. No, it is not the ideal report card; yet it embodies the principles of democratic development in incorporating the best thinking of the entire group. It is not conceived to become a permanent, static form but one that will be studied, tried, and revised as the needs arise. It represents a change from one report card form for grades 1-6 to two forms, one for grades 1 and 2, the other for grades 3-6 inclusive, giving more attention to specific development in reporting for the first two grades. Both cards embody special emphasis on the development of health, work and social habits, so essential to the all-round development of the child. Both forms are sent out at six-week intervals, signed and returned the following day. There is space for the teacher and the parent to request conferences and, in addition, space for parents to comment on the report. An added feature is a separate note sheet for the teacher to use in giving any additional information felt necessary to meet more adequately the aim of the report. The form adopted is largely the result of a community request and embodies as basic thinking the desires of the community; for after all the primary aim of reporting is that of informing the parents of the progress of their children.